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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,190	04/02/2004	Steven George Hansen	081468-0309021	7518
909	7590	03/13/2006	EXAMINER GUTIERREZ, KEVIN C	
PILLSBURY WINTHROP SHAW PITTMAN, LLP P.O. BOX 10500 MCLEAN, VA 22102			ART UNIT 2851	PAPER NUMBER

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/816,190	HANSEN ET AL.	
	Examiner	Art Unit	
	Kevin Gutierrez	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 4-8 and 11-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 9, 10 and 14-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Remarks (page 7, last two paragraphs, filed December 28, 2005), with respect to the rejection(s) of claim(s) 1-3, 9 and 17-20 under 102 and 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art reference(s).

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the location of the claimed element shown in Figure 3A must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be

necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Applicant has stated the amendment(s) to claim 16 to obviate the objection(s) stated in the previous Office Action. However, the amended claims received does not reflect the changes stated in the Applicant's Remarks (page 7, third paragraph) filed on December 28, 2005. Therefore, the objections are maintained.

4. Claim 16 objected to as failing to provide proper antecedent basis for the claimed subject matter: Page 17, claim 16, last line - "...of said diaphragm." The underlined text lacks proper antecedent basis.

5. Claim 16 is objected to because of the following informalities:

(a) Page 17, claim 16, "...wherein said polarize ..." The underlined text should be replaced with --polarizer-- as suggested by the Examiner.

(b) Page 17, claim 16, "...polarizers mounted in the or each aperture ..." The underlined text should be deleted as suggested by the Examiner.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3, 9-10, 15, 17 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Shiraishi (US 2004/0248043).

Regarding claims 1, 18 and 19, Shiraishi discloses

- “an illumination system (2-18) for providing a projection beam of radiation (IL);
- a support structure for (20; reticle stage) supporting patterning structure (R; reticle), the patterning structure serving to impart the projection beam with a pattern in its cross-section (see Abstract);
- a substrate table (24; wafer stage) for holding a substrate (W; wafer);
- a projection system (23) for projecting the patterned beam onto a target portion of the substrate (W);
- at least one pupil shaping element (11; aperture diaphragm) constructed and arranged to define an on-axis (AX2), substantially rectilinear intensity distribution on the projection beam at a pupil plane of the illumination system ([0025]); and
- a polarizer (4; polarization control member), constructed and arranged to impart a linear polarization to the projection beam ([0191], last sentence).”

Regarding claim 2, Shiraishi discloses “wherein said intensity distribution is a rectangle having an aspect ratio not equal to 1, and the longer dimension of the rectangle is parallel to the X or Y axis of the apparatus (see fig. 3A, 12a; opening and [0088], first sentence)”

Regarding claim 3, Shiraishi discloses “wherein said linear polarization is substantially parallel to the longer dimension of the rectangle (see fig. 3B and [0108], lines 7-12).”

Regarding claim 9, Shiraishi discloses “wherein the center of said intensity distribution lies on the optical axis of the illumination system (see fig. 3A, where AX3 lies in the center of opening 12a).”

Regarding claim 10, Shiraishi discloses “further comprising a phase-shift mask and said patterning structure ([0008], first sentence, where a phase shift mask is disclosed).”

Regarding claim 15, Shiraishi disclose “wherein said at least one optical element (11a) comprises a diaphragm having an aperture (12) or apertures corresponding to said intensity distribution ([0025]).”

Regarding claim 17, Shiraishi discloses “wherein said polarize comprises a radiation source (1; light source) that emits a linearly polarized beam (IL; exposure light, where IL is polarized by polarization control member 4).”

Regarding claim 20, Shiraishi discloses “wherein in said linearly polarizing, the direction of the linear polarization imparted to the beam is substantially parallel to

lines of said pattern (fig. 3B or 3C; [0020], first sentence, where the polarization could be in the directions disclosed by the figures and to the mask pattern).”

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraishi in view of Orino (US 2003/0020892).

Shiraishi discloses an optical element and further suggests the optical element be a variable field diaphragm ([0079], lines 15-19), but does not disclose “wherein said at least one optical element comprises a set of moveable blades.”

However, having an optical element where it comprises a set of moveable blades is known to the art as it is evident by the teaching of Orino ([0041], lines 3-6, where Orino has a masking blade with 4 moveable parts). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the optical element of Tanaka et al by having moveable blades for at least the purpose of regulating the illumination range on the plane of the mask as suggested by Shiraishi.

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraishi in view of Orino, as applied to claim 14, and in further view of Onanian (4,568,148).

Shiraishi, as modified, discloses all of the claimed limitations except “wherein said polarize comprises polarizers mounted in the or each aperture of said diaphragm.”

However, having “said polarize comprises polarizers mounted in the or each aperture of said diaphragm” is known to the art as it is evident by the teaching of Onanian (col. 8, lines 1-2, where the polarizing wheels have polarizing arcuate segments). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the polarizer of Tanaka et al by using a polarizing wheel for at least the purpose to obtain an image of a higher resolution.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Takeishi et al. (US 2004/0043310) discloses a diaphragm to select exposure region.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Gutierrez whose telephone number is (571)-272-5922. The examiner can normally be reached on Monday-Friday: 7:30 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571)-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "W B Perkey", with a stylized flourish at the end.

Kevin Gutierrez
Examiner
Art Unit 2851

March 2, 2006

William Perkey
Primary Examiner